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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,924	02/16/2001	Tsutomu Gamo	7217/63753	4281

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EXAMINER
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CAO, DIEM K

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 11/20/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

24

# Office Action Summary

Application No.

09/784,924

Applicant(s)

GAMO, TSUTOMU

Examiner

Diem K Cao

Art Unit

2126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. This Office action is in response to the Application filed on 2/16/2001.
2. Claims 1-21 are presented for examination. Applicant has amended claims 2-10 and 12-20 prior to the initial examination of the application.

#### *Priority*

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2, 8, 12, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8 and 18 recites the limitation "the respective execution threads thereof" in page 11, lines 3-4 and page 13, lines 1-2, respectively. There is insufficient antecedent basis for this limitation in the claim.

Claims 2 and 12 recites the limitation "said complex object ... context switch", the relationship between "does not cause context switch" and "plurality of objects which can be invoked in a manner equivalent to a function call" is unclear. Also, the claim limitation is vague or unclear as to what "equivalent manner" is meant to be.

Correction is required.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1-2, 5-7, 11-12, 15-17 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by McAffer (Meta-level Programming with CodA).

**As to claim 1**, McAffer teaches a complex object constituted of a plurality of objects (set of meta objects, Send, Accept, Queue, Receive, Protocol, Execution and State; page 193, section 2.2) having execution seriality (The Send then transfers ... executing the found method; page 195, last paragraph) and an independent object external to the complex object (object B; page 195, eighth paragraph and Fig. 1), temporarily storing one or more messages directed from an object within the complex object to the independent object external to the complex object (The Send then transfers M to B's Accept which queues it with the Queue; page 195, last paragraph), sending the one or more stored messages to the independent object an a single operation (invokes the Receive and fetches the next message from the Queue ...the message is processed by executing the found method; page 195, last paragraph) when the complex object and the independent object enter a predetermined relationship (B will execute a receive operation; page 195, last paragraph).

**As to claim 2**, McAffer teaches in one embodiment that the complex object is constituted of a plurality of objects which can be invoked in a manner equivalent to a function call which does not cause a context switch (Compound PortedObjects ... manipulate a group of

PortedObjects as one; page 104, section 5.2 and Fig. 4).

**As to claim 5**, McAffer teaches the step of temporarily storing controls message storing in accordance with a relationship between the complex object and the independent object (Accepts define the receiver side ... interaction between the sender and receiver; page 194, Accept section and Messages which have been accepted but can not yet be processed must be queued; page 194, Queue section).

**As to claim 6**, McAffer teaches the step of temporarily storing controls message storing in accordance with a status of the independent object (Messages which have been accepted but cannot yet be processed must be queued; page 194, Queue section).

**As to claim 7**, McAffer teaches the step of temporarily storing controls message storing on a destination-by-destination basis when the one or more stored messages are directed from the object within the complex object to a plurality of independent objects external to the complex object (multicasting messages to a known set of receivers; page 202, section Send and A MultiQueue supports ... the arrival port; page 203, section Queue).

**As to apparatus and computer product claims 11 and 21**, they correspond to the method claim of claim 1.

**As to claim 12**, see rejection of claim 2 above.

**As to claims 15-17**, see rejections of claims 15-17 above.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over McAffer (Meta-level Programming with CodA) in view of "Official Notice".

As to claims 9 and 19, McAffer teaches the system constituted of a plurality of objects is an object-oriented operating system constituted of a plurality of objects (The boom in micro-kernel operating system ... use the OS components as needed; page 192, fifth paragraph), and in one embodiment, the meta objects can be implemented as concurrent objects (page 196-198, section 3). "Official Notice" is taken to combine the teaching and suggestion of McAffer because they are useful in normal object behavior description and they are relevant to system parallelism (page 197, last paragraph).

10. Claims 8, 10, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McAffer (Meta-level Programming with CodA) in view of Tajes-Martinez et al (A computational model for an object-oriented operating system).

As to claims 8 and 18, McAffer does not teach wherein determining whether to store or immediately send the one or more messages in accordance with a relationship between the complex object which sends the one or more messages and the independent object which receives the one or more messages, with respect to a scheduling priority level and an interrupt priority level of respective execution threads thereof. Tajes-Martinez teaches determining whether to store or immediately send the one or more messages in accordance with a relationship between the complex object which sends the one or more messages and the independent object which receives the one or more messages, with respect to a scheduling priority level and an interrupt priority level of respective execution threads thereof (Scheduler meta-object; sections

4.4 and 4.5). It would have been obvious to apply the teaching of Tajes-Martinez to the system of McAffer because it provides inter-object and intra-object concurrency.

**As to claims 10 and 20**, McAffer does not explicitly teach the system constituted of a plurality of objects is one of an application program and a device driver constituted of a plurality of concurrent objects. Tajes-Martinez teaches the system constituted of a plurality of objects is one of an application program (Base level is composed of application-defined of base objects; section 4.3, right column) and a device driver constituted of a plurality of concurrent objects (the meta level still consist of a set of meta-objects that control the way basic-objects are executed; section 4.3, right column and SO4 is intended to be an object-oriented OS; abstract). It would have been obvious to apply the teaching of Tajes-Martinez to the system of McAffer because it provides important advantages such as each object will be able to manage its own computation and uniformity is maintained.

11. Claims 3-4 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over McAffer (Meta-level Programming with CodA) in view of Swartz et al. (US 2003/0074463 A1).

**As to claim 3**, McAffer teaches the step of sending determines whether the complex object and the independent object have entered the predetermined relationship (B will execute a receive operation; page 195, last paragraph). However, McAffer does not teach creating a history of message communications by the object within the complex object, wherein the step of sending determines whether the complex object and the independent object have entered the predetermined relationship based on the history of message communications. Swartz teaches creating a history of message communications by the object within the system (The SRP receives requests, logs them; page 9, section 0125 and the requests and responses may be logged upon

receipt; page 10, section 0130) and the message is sent after validation for completeness and accuracy and also type of request and the request destination (page 9, section 0125). It would have been obvious to apply the teaching of Swartz to the system of McAffer because it increases the performance of the system (page 9, section 0123).

As to **claim 4**, McAffer teaches the step of sending determines whether the complex object and the independent object have entered the predetermined relationship (B will execute a receive operation; page 195, last paragraph). However, McAffer does not teach creating a history of message communications by the object within the complex object, wherein the step of sending sends the one or more stored messages in a single operation when the history of message communications is indicative of a message communication from a different execution thread when the object within the complex object exits execution. Swartz teaches creating a history of message communications by the object within the system (The SRP receives requests, logs them; page 9, section 0125 and the requests and responses may be logged upon receipt; page 10, section 0130) and the message is sent after validation for completeness and accuracy and also type of request and the request destination (page 9, section 0125). It would have been obvious to apply the teaching of Swartz to the system of McAffer because it increases the performance of the system (page 9, section 0123).

As to **claims 13-14**, see rejections of claims 3-4 above.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Nantes teaches "Towards a Methodology for Explicit Composition of MetaObjects".



- Ichisugi et al. teach "RbCl: A Reflective Object-Oriented Concurrent Language without a Run-time Kernel".


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diem K Cao whose telephone number is (703) 305-5220. The examiner can normally be reached on Monday - Thursday, 9:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (703) 305-8498. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 305-9731 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

**Any response to this action should be mailed to:**  
Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Diem Cao  
November 12, 2003

  
**JOHN FOLLANSBEE  
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